Yaxuan (Sean) Zhang

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EDUCATION

Ph.D., Geography (GIS), University of Minnesota - Twin Cities (UMN), MN   May 2024

M.S., GIS, Computer Science (minor), University of Minnesota, MN (GPA: 3.84/4.0)   May 2024

B.Eng., GIS, Wuhan University, Wuhan, China (GPA: 3.78/4.0)   Jun 2018

SKILLS

Programming: R, Python, SQL, Git, HTML   **Software:** ArcGIS, PostGIS, Stata, SPSS, Microsoft Office
Python Libraries: Pandas, Numpy, sklearn, PyTorch, TensorFlow, matplotlib, plotly, ArcPy, Geopandas
Skillset: urban mobility, transportation planning, GIS, cartography, statistical modeling, machine learning, forecasting

RELEVANT EXPERIENCES

Urban Mobility Data Researcher, University of Minnesota, Minneapolis, MN   Jun 2021 – present
- Led a data collection process, designing surveys, media, and collecting GPS travel data from 1000+ participants
- Applied data mining and statistical models to study gender discrepancies in mobility patterns to promote equity.
- Adopted an interpretable ML algorithm to model health disparities related to mobility behaviors.
- Delivered a recommendation report to external stakeholders (MnDOT) to inform policy-making decisions.

Transportation Planning Data Science Intern, Metropolitan Council, Saint. Paul, MN   June 2023 – Aug 2023
- Designed a SQL pipeline to fetch, clean and process real-time traffic data into a web dynamic map dashboard.
- Implemented a Generalized Additive Model (GAM) for traffic volume forecasting with temporal fluctuations.
- Conducted QAQC, analysis and visualization for transit data and delivered insights to internal stakeholders.

Mobility and Geospatial Data Analyst, University of Minnesota, Minneapolis, MN   Jun 2020 – May 2021
- Created an R pipeline for GPS travel survey, including data cleaning, mobility pattern analysis and visualization.
- Automated data quality checking of geo-boundary and microdata, achieving 100%+ efficiency improvement.

DATA SCIENCE PROJECTS

Spatiotemporal Urban Mobility Pattern Analytics, research   Sep 2020 – Sep 2022
- Developed a data-driven framework to address spatiotemporal quality issues in GPS mobility data.
- Adopted ML methods and trajectory analysis to identify individuals' spatiotemporal mobility patterns.
- Built a python pipeline to predict transfer stops and visualize trip route by combing transit data with GTFS.

Invasive Species Monitoring and Geo-simulation System, coursework   Jan 2023 – May 2023
- Designed and implemented a real-time pipeline with three spatial interaction models, achieving 95.9% accuracy.
- Published web maps utilizing a comprehensive toolkit including ArcPy, PostGIS, Google Cloud.

ResNet Convolutional Neural Networks (CNN), coursework   Jan 2023 – May 2023
- Performed feature extraction, AutoML, and CNN on electrocardiogram for heart disease classification.
- Designed a multi-level Residual Network using PyTorch, improving 9.5% accuracy versus baseline CNN.

Bayesian Modeling and Prediction, coursework   Jan 2021 – May 2021
- Improved model accuracy 20% using Bayesian Lasso versus frequentist methods for breast cancer diagnosis.

Location Intelligence Business Analytics, coursework   Mar 2017 - Sep 2017
- Applied geospatial statistical models (e.g., GWR) to analyze spatial patterns of e-business in China.
- Utilized multi-source data (e.g., POI, parcel) to conduct location-based analysis for business hotspot selection.

SELECTED PUBLICATIONS AND CONFERENCE PRESENTATIONS

Selections from 8 publications and 12 presentations

Zhang, Y., Li, C., Song, Y., Chai, Y., & Fan, Y. (2022). Personalizing the dichotomy of fixed and flexible activities in everyday life: deriving prism anchors from GPS-enabled survey data. *Transportation,* 1-26.

Zhang, Y., Song, Y., & Fan, Y. (2022). Improving data quality of smartphone-based activity-travel survey: A framework for data post-processing. *Transactions in GIS*, 26(1), 475-504